MMS ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES

Region: Alaska

Planning Areas: Beaufort Sea

Title: Assessment of the Direction and Rate of Alongshore Transport of Sand and Gravel in the Prudhoe Bay Region, North Arctic Alaska (AK-93-48-61)

MMS Information Needs to be Addressed: Information will be used for NEPA analysis and documentation for Beaufort Sea Lease Sales, oil-spill-contingency plans, and DPPs.

Total Cost: $268,000 **Period of Performance:** FY 2005-2008

Conducting Organization: CMI, UAF

MMS Contact: Chief, Alaska Environmental Studies Section

Description:

Background In support of oil-related activities several coastal and offshore infrastructures have been built (e.g., docks, causeways, offshore production and exploration islands, submerged marine pipelines, extended-offshore-reach drilling pads on the shoreline). The possible cause-effect between the infrastructures and the natural nearshore hydrodynamic processes (wave, current, sea ice regimes, storm surges), coastal geomorphology, barrier island stability, shoreline erosion, and littoral sediment drift are not fully known, but are important to safe development.

Objectives

1. Comprehensive gray literature survey of past and ongoing investigations along the North Slope coast
2. Field determination of seasonal direction and volume of sand and gravel beach transport for Narwhal Island, a barrier island offshore of the Liberty prospect and Endicott causeway
3. Examine the impact of episodic storms on sediment drift

Methods

1. Literature review through internet and oil industry libraries
2. Beach transport will be determined by use of fluorescent dyed sand and tagged gravel using tiny Passive Integrated Transponder tags which transmit at 132.2 kHz.
3. Adapt existing Beaufort Sea storm surge model to further examine the impact of episodic storms on sediment drift.

Current Status:

The field activities were completed in fall. The storm surge model for the study area has been completed and the wave climate statistics are being used to complete the calculation of the longshore sand transport direction and rate. A database of aerial photos, satellite images and

historical maps has been compiled and used to calculate the rate of long-term mass migration of Narwhal Island. The primary investigator is working on the Final Report.

Final Report Due: March 2009

Publications Completed: None

Affiliated WWW Sites: http://www.mms.gov/alaska/
http://www.sfos.uaf.edu/cmi/

Revised Date: March 2008